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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/726,977	11/30/2000	Won-Sung Choi	YPL-0014	2126

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EXAMINER

KACKAR, RAM N

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 06/09/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/726,977

Applicant(s)

CHOI, WON-SUNG

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-2, 6-14 and 17-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-2, 6-14 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 6-10, 12-14 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horie (US Patent 5928428) in view of Limb et al (US Patent 5352615) and further in view of Tanaka (US Patent 5091207) and Nozawa et al (US Patent 5290381).

Horie discloses a thin film deposition apparatus comprising, a reactor (Fig 1-1), a heater (Fig 1-2) capable of heating the chamber at least to 700 degrees C, inert gas and reaction gas supply portion wherein the reaction gas or the inert gas could be selected (Fig 1-5a and 5b), an exhaust pump (Fig 1-9) and Ozone gas supply (Fig 1-5c) with a main valve down stream of ozone generator through a mass flow controller branching in parallel to two flow passages (Fig 1).

Horie does not disclose ozone flow through two mass flow controllers in parallel, selection transfer member for selecting transfer of ozone to either reaction chamber or exhaust pump and automatic removal of excess ozone generated by the ozone generator.

Limb et al disclose a reactor where inert gas and reactive gases are introduced and discloses two parallel flow passages through two mass flow controllers connected at an input of the reaction chamber (Fig 311, 312). It would be obvious to connect two mass flow controllers in parallel to increase the range of flow measurement.

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Tanaka discloses selection valves to switch main gas to reactor or exhaust pump (Fig 7 413/414 or 424/425). It would be obvious to have a switchable connection to exhaust so as to be able to maintain supply even when not needed by the reactor (Col 8 lines 25-31).

Nozawa et al disclose automatic pressure controller connected in parallel to the supply of a gas to remove excess gas so as to keep the usable supply of gas constant (Fig 3).

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to provide for switching the Ozone line either to reactor for process use or to exhaust if not needed or to purge the line for cleaning purposes and to have an automatic Ozone controller like of Nozawa for regulation of Ozone.

Claims 8, 9, 13 and 14 are rejected as being directed to an intended use. Claims 8 and 9 recite Ozone gas flow. The MFC of Horie and Limb would be capable of controlling the flow. Claim 13 is directed to temperature. The heater disclosed in Horie would be capable of the temperature and claim 14 recites Argon being the inert gas. Limb discloses Argon as an inert gas (Col 2 line 42).

3. Claims 11 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horie (US Patent 5928428) in view of Limb et al (US Patent 5352615), Tanaka (US Patent 5091207) and Nozawa et al (US Patent 5290381) as applied to claim 10 and further in view of Nishikawa et al (US 5470390).

Nozawa et al disclose automatic removal of excess Ozone but do not disclose a check valve to prevent back flow of Ozone from removal side to the reactor.

Nishikawa et al disclose the use of check valve to prevent back flow of gas as in (Fig 2-15).

Therefore it would have been obvious to one of ordinary skill in the art at the time invention was made to install a check valve as a safety device to prevent back flow of exhausted Ozone to reactor.

Response to Amendment

Applicants arguments filed on 5/23/2003 have been considered but not found to be persuasive.

The invention essentially is an ozone supply system to a vacuum process chamber, the main components of which are an Ozone generator with an automatic pressure regulator, mass flow controllers for ozone and means to switch the gas lines to either chamber or to exhaust.

It is claimed that two mass flow controllers, each with an up stream and down stream valve are connected in parallel between the output of the ozone supply and the input of the process chamber.

Applicant argues that Horie does not teach or suggest connecting two mass flow controllers in parallel between Ozone generator and the reactor.

Horie discloses the output of ozone generator branching in two parts and if combined with Limb (Connect one branch to 311 and other to 312 in the main Figure) does disclose the identical structure. Secondly, the two mass flow controllers, connected in the same gas passage is mere duplication of parts and is held to have been obvious (*In re Harza* 124 USPQ 378 (CCPA 1960)).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 703 305 3996. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 703 308 1633. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9310 for regular communications and 703 872 9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

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June 6, 2003


GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700